

**TOWN OF MARBLEHEAD  
CONTRIBUTORY RETIREMENT SYSTEM**

Actuarial Valuation Report

January 1, 2006

## **TABLE OF CONTENTS**

	<u>Page</u>
<b>REPORT SUMMARY</b>	
Highlights	1
Introduction	2
Actuarial Experience	3
 <b>ACTUARIAL COSTS AND LIABILITIES</b>	
Normal Costs	4
Present Value of Actuarial Accrued Liabilities	5
Present Value of Future Benefits	6
 <b>FUNDED STATUS AND APPROPRIATIONS</b>	
Market Value of Plan Assets	7
Actuarial Value of Assets	8
Unfunded Actuarial Accrued Liabilities	9
Appropriations	10
Appropriation Forecast	11
GAS No. 25 and GAS No. 27	13
PERAC Annual Statement	14
 <b>EXHIBITS</b>	
1 Age/Service Distribution with Salary	16
2 Retiree Distribution	17
3 Disabled Retiree Distribution	18
4 Cashflow Forecast	19
5 Summary of Plan Provisions	20
6 Actuarial Methods and Assumptions	27
7 Glossary of Terms	31
 <b>CERTIFICATION</b>	33
 <b>BREAKOUTS</b>	34

## Report Summary:

<u>Highlights</u>	<u>January 1, 2004</u>	<u>January 1, 2006</u>
<u>Contributions</u>		
Funding Schedule FY 2007	\$2,274,000	\$2,274,000
Funding Schedule FY 2008	2,357,000	2,266,267
<u>Funded Ratios</u>		
GAS No. 25	83.9%	83.3%
<u>Participants</u>		
Actives	384	369
Retirees and Beneficiaries	286	282
Vested	0	3
Inactives	65	54
Disabled	<u>35</u>	<u>35</u>
Total	770	743
<u>Payroll</u>		
Payroll of Active Members	\$13,982,752	\$14,159,647
Average Payroll	36,413	38,373
<u>Normal Cost</u>		
Employer	1,140,219	890,511
Employee	1,089,948	1,106,194
Administrative Expenses	<u>120,000</u>	<u>135,000</u>
Total	2,350,167	2,131,705
<u>Actuarial Accrued Liabilities</u>		
Actives	38,122,882	35,317,485
Retirees, Beneficiaries, Disabilities and Inactives	<u>38,752,758</u>	<u>47,630,784</u>
Total	76,875,640	82,948,269
<u>Actuarial Value of Assets</u>	<u>64,490,373</u>	<u>69,105,082</u>
<u>Unfunded Actuarial Accrued Liabilities</u>	\$12,385,267	\$13,843,187

## **Introduction**

This report presents the Town of Marblehead actuarial valuation findings as of January 1, 2006, under the Commonwealth of Massachusetts Retirement System.

The actuarial valuation is based on:

- Provisions of Chapter 32 of the Massachusetts General Laws "M.G.L.", as of January 1, 2006.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employees' Retirement Administration Commission by the Town of Marblehead Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2006. It assumed the new annual cost-of-living adjustments (COLA) of 3.00%.

The valuation and forecast do not account for:

- Any other subsequent changes in the law
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The cost of these benefits has been assumed by the State under Proposition Two and One-Half.

**Actuarial Experience**

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

Since the last actuarial valuation, the total unfunded actuarial accrued liability increased by 11.8% to \$13,843,187. The increase is the result of net unfavorable actuarial experience during the preceding years. The primary component of the unfavorable experience was an annual investment return on assets of 6.1%, less than the 8% assumption. This caused the unfunded accrued liability to increase by about \$2,613,962, to \$14,999,229. A change to the salary scale assumption lowered the unfunded accrued liability to \$13,843,187.

## Actuarial Costs and Liabilities:

### Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability, and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

**Table I**

	<u>January 1, 2004</u>	<u>January 1, 2006</u>
Superannuation	\$1,648,967	\$1,459,774
Termination	99,053	93,060
Death	109,629	113,584
Disability	372,518	330,287
Administrative Expenses	<u>120,000</u>	<u>135,000</u>
Total Normal Cost	2,350,167	2,131,705
% of Pay	16.8%	15.1%
Employee Contributions	1,089,948	1,106,194
% of Pay	7.8%	7.8%
Employer Normal Cost	\$1,260,219	\$1,025,511
% of Pay	9.0%	7.2%

**Present Value of Actuarial Accrued Liabilities**

The actuarial accrued liabilities (AAL) represents today's value of all benefits earned by the actives and inactive. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

**Table II**

	<u>January 1, 2004</u>	<u>January 1, 2006</u>
Actives		
Superannuations	\$34,662,754	\$30,693,079
Termination	(393,186)	355,365
Death	980,811	1,221,362
Disability	2,872,503	3,047,679
Retirees and Inactives		
Retirees and Beneficiaries	32,505,930	39,537,092
Vested	0	52,779
Terminated (Refund)	152,998	232,802
Disabled	<u>6,093,830</u>	<u>7,808,111</u>
Total	\$76,875,640	\$82,948,269

**Present Value of Future Benefits**

The present value of future benefits represents today's value of all benefits earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

**Table III**

	<u>January 1, 2004</u>	<u>January 1, 2006</u>
Actives		
Superannuation	\$50,605,307	\$43,704,380
Termination	650,748	818,539
Death	2,025,338	2,201,939
Disability	6,345,416	6,443,721
Retirees and Inactives		
Retirees and Beneficiaries	32,505,930	39,537,092
Vested	0	52,779
Terminated (Refund)	152,998	232,802
Disabled	<u>6,093,830</u>	<u>7,808,111</u>
Total	\$98,379,567	\$100,799,363



## Funded Status and Appropriations:

### Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

**Table IV**

	<u>January 1, 2004</u>	<u>January 1, 2006</u>
Cash equivalents	\$25,443	\$34,721
Short term investments	0	0
Fixed income securities	0	0
Equities	0	0
International	0	0
Real Estate	0	0
Venture Capital	0	0
PRIT	61,104,674	74,632,784
Accounts receivable	293,146	318,093
Accounts payable	(7,362)	0
Accrued income	<u>0</u>	<u>0</u>
Total Market Value	\$61,415,901	\$74,985,598
Total Actuarial Value	\$64,490,373	\$69,105,082

**Actuarial Value of Assets**

The actuarial value of assets is determined by projecting the market value of assets as of the beginning of the prior plan year using the assumed rate of return during that year (8.0%) and accounting for deposits and disbursements with interest at the assumed rate of return. An adjustment is then applied to recognize the difference between the actual investment return and expected return over a five-year period. This preliminary actuarial value is not allowed to differ from the market value of assets by more than 20%. The calculation of the actuarial value of assets as of January 1, 2006 is presented in Table V.

	<u>January 1, 2006</u>
(1) Market value at January 1, 2005	\$68,472,244
(2) 2005 Contributions and Receipts	\$3,935,232
(3) 2005 Benefit Payments and Expenses	(\$5,511,811)
(4) Net interest adjustment at 8.5% on (1), (2), and (3) to December 31, 2005	\$5,414,716
(5) Expected market value on January 1, 2006	\$72,310,381
(1) + (2) + (3) + (4)	
(6) Actual market value on January 1, 2006	\$74,985,598
(7) 2005 (Gain) / Loss	(\$2,675,217)
(8) 80% of 2005 (Gain) / Loss	(\$2,140,173)
(9) 2004 (Gain) / Loss	(\$3,591,908)
(10) 60% of 2004 (Gain) / Loss	(\$2,155,145)
(11) 2003 (Gain) / Loss	(\$8,672,300)
(12) 40% of 2003 (Gain) / Loss	(\$3,468,920)
(13) 2002 (Gain) / Loss	\$9,418,612
(14) 20% of 2002 (Gain) / Loss	\$1,883,722
(15) Actuarial value on January 1, 2006, (6) + (8) + (10) + (12) + (14)	\$69,105,082
(16) but not less than 80% nor greater than 120% of (6)	\$69,105,082
Ratio of actuarial value to market value	92.16%

**Unfunded Actuarial Accrued Liabilities**

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

**Table VI**

	<u>January 1, 2004</u>	<u>January 1, 2006</u>
Actuarial Accrued Liability	\$76,875,640	\$82,948,269
Actuarial Assets	<u>64,490,373</u>	<u>69,105,082</u>
Unfunded Actuarial Accrued Liability	\$12,385,267	\$13,843,187
Funded Status	83.9%	83.3%

## **Appropriations**

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Section 22D of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2028, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the prior unfunded actuarial accrued liability by June 30, 2023  
\$ 13,843,187 over 17 years with 4.5 % increasing payments
- Interest adjustment for payments deposited semiannually.

The pension appropriation is shown in Table VII.

**Table VII**

	<u>January 1, 2004</u>	<u>January 1, 2006</u>
Normal cost	\$1,260,219	\$1,025,511
Amortization payment of the prior accrued liability	734,506	1,046,178
Total cost	\$1,994,725	\$2,071,689
% of Pay	14.3%	14.6%
Fiscal 2007 cost	\$2,274,000	\$2,274,000
Fiscal 2008 cost	\$2,357,000	\$2,266,267

### **Appropriation Forecast**

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number of employees constant. The total payroll of the system is expected to increase 4.5% per year. The employee contribution rate is expected to increase to 10.5% by 2028 with replacement of members contributing 5%, 7%, and 8% with those contributing 9%. Payments are assumed to be spread over the fiscal year.

The employer total cost, as a percentage of payroll, is expected to fluctuate between 15% and 13% during the next 17 years until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. For FYE 2008, the total cost represents on average about 15.3% of payroll and will decrease to 13.3% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of about 5% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

P:\Actrl\Marble\Val06\Marblehead06\_Val\_new sal.xls\Breakouts

**Appropriation Forecast**

Fiscal Year Ending	Employee Payroll*	Employee Contribution	Employer Normal Cost with Interest	Amortization Payments with Interest	Employer Total Cost with Interest	Employer Total Cost % of Payroll	Funded Ratio %**
2007	\$14,159,647	\$1,106,194	\$1,086,245	\$1,187,755	\$2,274,000	16.1	83.3
2008	\$14,796,831	\$1,174,911	\$1,115,067	\$1,151,200	\$2,266,267	15.3	84.0
2009	\$15,462,689	\$1,247,572	\$1,144,282	\$1,203,004	\$2,347,286	15.2	84.7
2010	\$16,158,509	\$1,324,393	\$1,173,870	\$1,257,139	\$2,431,009	15.0	85.4
2011	\$16,885,642	\$1,405,602	\$1,203,803	\$1,313,710	\$2,517,513	14.9	86.1
2012	\$17,645,496	\$1,491,438	\$1,234,053	\$1,372,827	\$2,606,880	14.8	86.9
2013	\$18,439,544	\$1,582,152	\$1,264,588	\$1,434,604	\$2,699,192	14.6	87.7
2014	\$19,269,323	\$1,678,011	\$1,295,371	\$1,499,162	\$2,794,533	14.5	88.6
2015	\$20,136,443	\$1,779,293	\$1,326,365	\$1,566,624	\$2,892,989	14.4	89.5
2016	\$21,042,583	\$1,886,293	\$1,357,525	\$1,637,122	\$2,994,647	14.2	90.4
2017	\$21,989,499	\$1,999,320	\$1,388,803	\$1,710,792	\$3,099,595	14.1	91.4
2018	\$22,979,026	\$2,118,699	\$1,420,148	\$1,787,778	\$3,207,926	14.0	92.5
2019	\$24,013,082	\$2,244,774	\$1,451,501	\$1,868,228	\$3,319,729	13.8	93.6
2020	\$25,093,671	\$2,377,905	\$1,482,800	\$1,952,298	\$3,435,098	13.7	94.7
2021	\$26,222,886	\$2,518,472	\$1,513,977	\$2,040,152	\$3,554,129	13.6	96.0
2022	\$27,402,916	\$2,666,875	\$1,544,957	\$2,131,959	\$3,676,916	13.4	97.2
2023	\$28,636,047	\$2,823,535	\$1,575,660	\$2,227,897	\$3,803,557	13.3	98.6
2024	\$29,924,670	\$2,988,893	\$1,605,997	\$0	\$1,605,997	5.4	100.0
2025	\$31,271,280	\$3,163,416	\$1,635,874	\$0	\$1,635,874	5.2	100.0
2026	\$32,678,487	\$3,347,594	\$1,665,187	\$0	\$1,665,187	5.1	100.0
2027	\$34,149,019	\$3,541,941	\$1,693,827	\$0	\$1,693,827	5.0	100.0
2028	\$35,685,725	\$3,747,001	\$1,721,671	\$0	\$1,721,671	4.8	100.0
2029	\$37,291,583	\$3,915,616	\$1,799,147	\$0	\$1,799,147	4.8	100.0
2030	\$38,969,704	\$4,091,819	\$1,880,108	\$0	\$1,880,108	4.8	100.0
2031	\$40,723,341	\$4,275,951	\$1,964,713	\$0	\$1,964,713	4.8	100.0
2032	\$42,555,891	\$4,468,369	\$2,053,125	\$0	\$2,053,125	4.8	100.0
2033	\$44,470,906	\$4,669,445	\$2,145,516	\$0	\$2,145,516	4.8	100.0
2034	\$46,472,097	\$4,879,570	\$2,242,064	\$0	\$2,242,064	4.8	100.0
2035	\$48,563,341	\$5,099,151	\$2,342,957	\$0	\$2,342,957	4.8	100.0
2036	\$50,748,692	\$5,328,613	\$2,448,390	\$0	\$2,448,390	4.8	100.0
2037	\$53,032,383	\$5,568,400	\$2,558,567	\$0	\$2,558,567	4.8	100.0
2038	\$55,418,840	\$5,818,978	\$2,673,703	\$0	\$2,673,703	4.8	100.0

\* Calendar basis

**GASB Statements No. 25 and No. 27**

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to \$0. The required disclosure information is shown in Table VIII.

**Table VIII**

	<u>January 1, 2004</u>	<u>January 1, 2006</u>
(1) Actuarial Accrued Liability	\$76,875,640	\$82,948,269
(2) Actuarial Value of Assets	<u>64,490,373</u>	<u>69,105,082</u>
(3) Unfunded Actuarial Accrued Liability	12,385,267	13,843,187
(4) Funded Ratio (2)/(1)	83.9%	83.3%
(5) Covered Payroll	\$13,982,752	\$14,159,647
(6) UAAL as a percentage of payroll: (3)/(5)	88.6%	97.8%
(7) Annual Required Contribution (ARC)	\$2,112,859	\$2,274,000
(8) Net Pension Obligation	\$0	\$0

**PERAC Annual Statement**  
**APPENDIX PAGE 3**  
**ACTUARIAL VALUATION AND ASSUMPTIONS**

The most recent actuarial valuation of the System was prepared by Buck Consultants as of January 1, 2006.

The normal cost for employees on that date was:	\$1,106,194	7.8% of pay
The normal cost for the employer was:	890,511	6.3% of pay
The actuarial liability for active members was:		\$35,317,485
The actuarial liability for retired members was:		47,630,784
Total actuarial accrued liability:		82,948,269
System assets as of that date:		69,105,082
Unfunded actuarial accrued liability:		\$13,843,187
The ratio of system's assets to total actuarial liability was		83.3%

The principal actuarial assumptions used in the valuation are as follows:

Investment Return:	8.0%
Rate of Salary Increase:	5.0%

**SCHEDULE OF FUNDING PROGRESS**

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	UAAL as a percent of Covered Payroll
	(a)	(b)	(b-a)	(a/b)	(c)	(b-a)/c
01/01/06	\$69,105,082	\$82,948,269	\$13,843,187	83.3%	\$14,159,647	97.8%
01/01/04	64,490,373	76,875,640	12,385,267	83.9%	13,982,752	88.6%
01/01/02	60,615,356	71,022,123	10,406,767	85.3%	13,268,405	78.4%
01/01/00	54,015,622	63,939,027	9,923,405	84.5%	11,833,509	83.9%
01/01/98	42,540,310	55,347,500	12,807,190	76.9%	10,533,300	121.6%
01/01/96	35,962,462	40,299,500	4,337,038	89.2%	9,275,800	46.8%

Attach Copy of Current Approved Funding Schedule



## **EXHIBITS**

## Age/Service Distribution with Salary as of January 1, 2006

Attained Age	Average Salary	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0
20-24	2	0	0	0	0	0	0	0	0	0	2
	20,197	0	0	0	0	0	0	0	0	0	20,197
25-29	11	2	0	0	0	0	0	0	0	0	13
	32,011	39,506	0	0	0	0	0	0	0	0	33,164
30-34	15	5	1	0	0	0	0	0	0	0	21
	32,087	44,045	54,582	0	0	0	0	0	0	0	36,005
35-39	14	14	8	2	0	0	0	0	0	0	38
	38,749	41,648	48,513	46,600	0	0	0	0	0	0	42,286
40-44	11	12	6	4	3	0	0	0	0	0	36
	39,437	34,447	41,752	43,640	51,940	0	0	0	0	0	39,669
45-49	19	18	7	6	9	2	0	0	0	0	61
	25,978	29,174	40,925	41,596	56,328	60,650	0	0	0	0	35,787
50-54	10	27	11	2	6	11	8	0	0	0	75
	28,909	28,292	31,015	30,827	63,463	57,976	54,162	0	0	0	38,768
55-59	9	10	11	8	8	9	10	4	0	0	69
	22,879	40,818	38,775	34,872	46,047	46,570	56,467	61,504	0	0	42,287
60-64	2	3	10	7	6	4	2	4	0	0	38
	32,846	28,664	29,511	31,363	36,634	46,615	34,960	61,781	0	0	36,570
65-69	0	5	1	3	3	0	1	0	0	0	13
	0	26,034	38,244	31,228	35,796	0	40,913	0	0	0	31,569
70+	1	0	1	1	0	0	0	0	0	0	3
	20,055	0	27,013	41,571	0	0	0	0	0	0	29,546
Total Employees	94	96	56	33	35	26	21	8	0	0	369
Average Salary	31,111	33,427	37,638	36,750	49,689	52,486	52,800	61,643	0	0	38,373

## Retiree Distribution as of January 1, 2006

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	0	0	0	0	0
45-49	1	0	1	6,649	0	6,649
50-54	4	2	6	77,895	15,205	93,100
55-59	19	4	23	524,751	39,680	564,431
60-64	17	12	29	590,755	97,630	688,385
65-69	25	11	36	701,061	114,296	815,358
70-74	26	20	46	524,730	256,868	781,599
75-79	24	39	63	444,037	392,972	837,009
80-84	13	26	39	153,838	210,692	364,531
85-89	3	20	23	18,769	151,417	170,186
90-94	4	7	11	24,837	69,988	94,825
95-99	2	3	5	18,076	11,817	29,892
Total	138	144	282	3,085,400	1,360,566	4,445,965
Average (Age/Payment)	70.7	77.5	74.2	22,358	9,448	15,766
Frequency Percent	48.9	51.1	100.0	69.4	30.6	100.0

## Disabled Retiree Distribution as of January 1, 2006

Attained Age	Number of Employees			Total Payments		
	Male	Female	Total	Male	Female	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	1	1	0	11,530	11,530
40-44	1	0	1	39,650	0	39,650
45-49	0	0	0	0	0	0
50-54	5	2	7	139,427	22,237	161,664
55-59	7	0	7	224,060	0	224,060
60-64	1	1	2	21,286	17,342	38,628
65-69	2	1	3	58,374	8,007	66,381
70-74	2	1	3	33,500	9,465	42,964
75-79	1	0	1	20,481	0	20,481
80-84	5	3	8	108,416	18,455	126,871
85-89	1	1	2	15,470	14,751	30,221
90-94	0	0	0	0	0	0
95-99	0	0	0	0	0	0
Total	25	10	35	660,663	101,786	762,449
Average (Age/Payment)	65.2	67.7	65.9	26,427	10,179	21,784
Frequency Percent	71.4	28.6	100.0	86.7	13.3	100.0

**EXHIBIT 4 - CASHFLOW FORECAST:**

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments	Employee Contributions	Employer Contributions	Investment Returns	Net change in plan assets
2006	\$5,340,231	\$1,106,194	\$2,274,000	\$5,304,646	\$3,344,609
2007	\$5,553,906	1,174,911	2,266,267	\$5,557,942	3,445,214
2008	\$5,763,155	1,247,572	2,347,286	\$5,826,446	3,658,149
2009	\$6,111,368	1,324,393	2,431,009	\$6,106,635	3,750,669
2010	\$6,379,998	1,405,602	2,517,513	\$6,397,458	3,940,575
2011	\$6,640,461	1,491,438	2,606,880	\$6,703,909	4,161,766
2012	\$6,964,062	1,582,152	2,699,192	\$7,025,703	4,342,985
2013	\$7,226,063	1,678,011	2,794,533	\$7,364,544	4,611,024
2014	\$7,584,203	1,779,293	2,892,989	\$7,721,197	4,809,276
2015	\$7,995,480	1,886,293	2,994,647	\$8,091,777	4,977,237
2016	\$8,269,875	1,999,320	3,099,595	\$8,481,324	5,310,365
2017	\$8,582,033	2,118,699	3,207,926	\$8,896,211	5,640,803
2018	\$8,896,748	2,244,774	3,319,729	\$9,337,615	6,005,370
2019	\$9,234,560	2,377,905	3,435,098	\$9,807,472	6,385,915
2020	\$9,555,031	2,518,472	3,554,129	\$10,308,658	6,826,228
2021	\$9,766,548	2,666,875	3,676,916	\$10,849,564	7,426,807
2022	\$9,948,633	2,823,535	3,803,557	\$11,439,904	8,118,362
2023	\$10,155,801	2,988,893	1,605,997	\$12,038,894	6,477,983
2024	\$10,345,302	3,163,416	1,635,874	\$12,550,381	7,004,369
2025	\$10,493,270	3,347,594	1,665,187	\$13,105,745	7,625,256
2026	\$10,654,622	3,541,941	1,693,827	\$13,710,403	8,291,549
2027	\$10,770,590	3,747,001	1,721,671	\$14,370,305	9,068,387
2028	\$10,888,919	3,915,616	1,799,147	\$15,089,608	9,915,452
2029	\$10,974,895	4,091,819	1,880,108	\$15,877,876	10,874,908
2030	\$10,971,574	4,275,951	1,964,713	\$16,746,332	12,015,422
2031	\$10,958,257	4,468,369	2,053,125	\$17,706,346	13,269,583
2032	\$10,915,619	4,669,445	2,145,516	\$18,767,765	14,667,107
2033	\$10,856,319	4,879,570	2,242,064	\$19,941,558	16,206,873
2034	\$10,770,815	5,099,151	2,342,957	\$21,239,474	17,910,767
2035	\$11,132,323	5,328,613	2,448,390	\$22,656,076	19,300,757

amounts in thousands

## **EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:**

This summary is prepared in accordance with Chapter 32 as of January 1, 2006, and does not take into account any subsequent changes.

### **1. Administration**

Each of the 107 contributory retirement systems for public employees for the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

### **2. Participation**

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporaries, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

- (i) Group 1: Most general employees in State and local government
- (ii) Group 2: Certain specified hazardous duty positions
- (iii) Group 3: State police officers and inspectors
- (iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

### 3. **Salary**

Salary is defined as gross regular compensation. Salary does not include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

### 4. **Member Contributions**

Member contributions vary depending upon date hired as follows:

<b><u>Date of Hire</u></b>	<b><u>Member Contribution Rate</u></b>
Prior to 1975	5.0% of Salary
1975 to 1983	7.0% of Salary
1984 to 1996	8.0% of Salary
1996 and Later plus	9.0% of Salary

Members hired on or after January 1, 1979 contribute an additional 2% of compensation in excess of \$30,000.

### 5. **Average Salary**

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.)

### 6. **Creditable Service**

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

## **7. Service Retirement**

### **a. Eligibility:**

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions are to be met:

- (i) completion of 20 years of service
- (ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member
- (iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service
- (iv) if an employee is a State police officer (Group 3), attainment of age 50



b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table:

<u>Age at Retirement</u>	<u>Percentage of Average Salary</u>		
	<u>Group 1</u>	<u>Group 2</u>	<u>Group 4</u>
65 or Over	.025	.025	.025
64	.024	.025	.025
63	.023	.025	.025
62	.022	.025	.025
61	.021	.025	.025
60	.020	.025	.025
59	.019	.024	.025
58	.018	.023	.025
57	.017	.022	.025
56	.016	.021	.025
55	.015	.020	.025
54	.014	.014	.024
53	.013	.013	.023
52	.012	.012	.022
51	.011	.011	.021
50	.010	.010	.020
49	.009	.009	.019
48	.008	.008	.018
47	.007	.007	.017
46	.006	.006	.016
45	.005	.005	.015
44	.004	.004	.004
43	.003	.003	.003
42	.002	.002	.002
41	.001	.001	.001

For Group 3 (State police), the benefit is 50% of the participant's final year's rate of regular salary, plus an additional 1% for each year of service in excess of 20 years. In addition, for veterans (all groups) there is an additional benefit of \$15 per year for each year of service, up to a maximum of 20 years of service.

## **8. Deferred Vested Retirement**

### **a. Eligibility:**

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

### **b. Benefit Amount:**

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

### **c. Refund of Contributions:**

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

## **9. Accidental Disability**

### **a. Eligibility:**

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

### **b. Benefit Amount:**

The accidental disability amount is 72% of annual salary plus \$450 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

## 10. **Ordinary Disability**

### a. **Eligibility:**

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55).

### b. **Benefit Amount:**

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55. If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55, he will receive not less than the superannuation allowance to which he is entitled.

## 11. **Survivor Benefits**

### a. **Occupational Death:**

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

### b. **Non-Occupational Death:**

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of \$250 per month to the surviving spouse, plus \$120 for the first child, plus \$90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of \$250 per month plus \$120 for the first child and \$90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

**12. Cost-of-Living Increases**

In accordance with the adoption of Chapter 17 of the Acts of 1997 the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum pension benefit on which a COLA may be granted is \$12,000. All COLA's granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

**13. Postretirement Death Benefits**

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

- (i) Option A – Life annuity
- (ii) Option B – Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member
- (iii) Option C – Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

## EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

### 1. Member Data

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

### 2. Valuation Date

January 1, 2006.

### 3. Actuarial Cost Method

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

### 4. Rate of Investment Return

It is assumed that the assets of the fund will accumulate at a compound annual rate of 8.00% per annum.

### 5. Salary Scale

The assumed annual rates for salary increases including longevity are illustrated by the following rates:

<u>Year</u>	<u>Rate</u>
2006	3.5%
2007	3.5%
2008	4.0%
2009	4.0%
2010	4.5%
2011	4.5%
2012+	5.0%

**6. Cost-of-Living Increases**

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and \$12,000 per year.

**7. \$30,000 Pay Cap**

The \$30,000 salary cap no longer applies for purposes of benefit determination.

**8. Value of Investments**

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC). The actuarial value is based on a 5 year smoothing of realized and unrealized investment earnings greater than or less than the expected return.

**9. Annual Rate of Withdrawal Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

<u>Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
20	0.07939	0.0000
30	0.07222	0.0000
40	0.05150	0.0000
50	0.02563	0.0000

**10. Annual Rate of Mortality**

It is assumed that both preretirement and postretirement mortality are represented by the RP-2000 Mortality Table for males and females. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward three years for male disabled members and zero years for female disabled members.

**11. Service Retirement**

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages:

<u>Age</u>	<u>General Employees</u>	<u>Police and Fire Employees</u>
50	0.0000	0.1000
51	0.0000	0.0200
52	0.0000	0.0200
53	0.0000	0.0200
54	0.0000	0.0200
55	0.1000	0.2500
56	0.0500	0.0500
57	0.0500	0.0500
58	0.0500	0.0500
59	0.0500	0.0500
60	0.0500	0.2500
61	0.0500	0.0500
62	0.2500	0.0500
63	0.1000	0.0500
64	0.1000	0.0500
65	0.1000	1.0000
66	0.1000	1.0000
67	1.0000	1.0000
68	1.0000	1.0000
69	1.0000	1.0000
70	1.0000	1.0000

**12. Annual Rate of Disability Prior to Retirement**

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

<b><u>Attained Age</u></b>	<b><u>General Employees</u></b>	<b><u>Police and Fire Employees</u></b>
20	0.00015	0.00120
30	0.00027	0.00220
40	0.00055	0.00440
50	0.00152	0.01220

In addition, it is assumed for the general employees that 45% of all disabilities are ordinary (55% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

**13. Family Composition**

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

**14. Administrative Expenses**

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2006 is \$135,000 and is anticipated to increase at 4.5% per year.



## EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

### 1. **Actuarial Accrued Liability**

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

### 2. **Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

### 3. **Actuarial Cost Method**

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

### 4. **Actuarial Present Value**

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

### 5. **Forecast**

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

**6. Normal Cost**

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

**7. Unfunded Actuarial Accrued Liability**

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

**8. Valuation Method**

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

**9. Vested Liability**

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

## **CERTIFICATION:**

This report fairly represents the actuarial position of the Town of Marblehead Contributory Retirement System contributing as of January 1, 2006, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost is reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

Buck Consultants

---

Daniel W. Sherman, ASA, MAAA  
Enrolled Actuary No. 02-4086

March 2006

## **BREAKOUTS**

## Breakouts

	<u>Total</u>	<u>All Others</u>	<u>Police</u>	<u>Fire</u>	<u>Housing</u>	<u>Harbor</u>	<u>Sewer</u>	<u>Water</u>	<u>Light</u>	<u>Hospital</u>	<u>School</u>
(1) Participants											
(a) Actives	369	105	42	39	11	4	10.5	9.5	26	0	122
(b) Retirees and Beneficiaries	282	86	29	33	2	2	5	4	24	23	74
(c) Vested	3	2	0	0	0	0	0	1	0	0	0
(d) Inactive (Refund)	54	14	6	0	1	0	0	0	0	0	33
(e) Disabled Retirees	<u>35</u>	<u>5</u>	<u>13</u>	<u>9</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>	<u>5</u>
(f) Total	743	212	90	81	14	6	15.5	14.5	50	26	234
(2) Payroll of Active Participants	\$14,159,647	\$4,233,470	\$1,913,168	\$1,762,192	\$374,010	\$174,686	\$423,120	\$374,119	\$1,465,597	\$0	\$3,439,285
(3) Normal Cost											
(a) Total Normal Cost	1,996,705	586,407	280,599	283,809	60,765	17,891	34,217	29,496	226,673	0	476,852
(b) Expected Employee Contributions	1,106,194	328,472	144,202	139,213	31,907	12,690	32,488	20,595	118,384	0	278,242
(c) Administrative Expenses	<u>135,000</u>	<u>39,648</u>	<u>18,972</u>	<u>19,189</u>	<u>4,108</u>	<u>1,210</u>	<u>2,313</u>	<u>1,994</u>	<u>15,326</u>	<u>0</u>	<u>32,241</u>
(d) Net Employer Normal Cost (a) - (b) + (c)	1,025,511	297,583	155,369	163,785	32,966	6,411	4,042	10,895	123,615	0	230,851
(4) Actuarial Accrued Liability	82,948,269	21,612,202	17,300,240	15,849,759	686,072	914,495	2,243,045	1,771,610	10,087,741	1,373,172	11,109,931
(5) Assets*	<u>69,105,082</u>	<u>18,005,355</u>	<u>14,413,013</u>	<u>13,204,602</u>	<u>571,574</u>	<u>761,875</u>	<u>1,868,705</u>	<u>1,475,947</u>	<u>8,404,204</u>	<u>1,144,004</u>	<u>9,255,801</u>
(6) Unfunded Actuarial Accrued Liability (4) - (5)	13,843,187	3,606,847	2,887,227	2,645,157	114,498	152,620	374,340	295,663	1,683,537	229,168	1,854,130
(7) Amortizations*	1,046,178	272,582	218,198	199,904	8,653	11,534	28,290	22,344	127,231	17,319	140,123
(8) Total Required Employer Contributions (3d) + (7)	2,071,689	570,165	373,567	363,689	41,619	17,945	32,332	33,239	250,846	17,319	370,974
(9) Fiscal 2008 Cost	2,266,266	623,716	408,653	397,847	45,528	19,630	35,369	36,361	274,406	18,946	405,817
(10) Percentage of total	100.00%	27.52%	18.03%	17.56%	2.01%	0.87%	1.56%	1.60%	12.11%	0.84%	17.91%

\* Allocation is based on the ratio of the Unfunded Actuarial Accrued Liability